

Interindustry Transactions in New Structures and Equipment, 1963

This article presents a "capital flow" table that shows the flows in 1963 of new structures and equipment from producing industries to using industries. This is the first such table prepared by OBE. It expands the information on fixed capital contained in OBE's input-output table for 1963 by showing the types of new capital goods received by each industry.

THIS report presents estimates of the flows of new structures and equipment from producing industries to using industries.¹ These new estimates, shown as a "capital flow" table, expand the information on capital goods that is contained in OBE's input-output table for 1963. The input-output table records the interindustry transactions in goods and services purchased on current account.² The output of new structures and equipment is shown in such a table as purchased by the final demand sectors "investors," "foreigners," and "government." The capital flow table disaggregates the investors sector so as to show flows of new capital to each using industry.

The capital flow table for 1963, and tables for later years that might be prepared, can be put to several uses. One obvious and important use of input-output tables is by a business firm

wishing to compare its market pattern with that for its industry as a whole. Since the input-output table provides such marketing information only for products that are purchased on current account, capital goods producers have not been able to use the input-output table in this way. The capital flow table fills this gap by providing a fairly detailed look at the markets for each type of capital good.

Another application of input-output in which the capital flow table can be used is in measuring the impact on each industry of a change in the level of investment spending by a given industry. The capital flow table, which provides information on the types of capital used by each industry, can be used to translate a specified global level of investment spending for structures and for equipment by an industry into the detailed requirements placed on the construction and equipment producing industries. These requirements, which comprise a bill of goods, can then be applied against an input-output table of total requirements to obtain the impact of the investment spending on each industry.³

The data in capital flow tables have important applications in areas not directly related to input-output. One such application is the estimation of

capital stocks by industry and by type of asset. A series of capital flow tables will provide a basis for estimating capital stocks in more detail than is now possible—e.g., by type of asset for each user industry shown in the capital flow tables.

Layout of the table

Capital flow tables can be prepared on the basis of either user or owner. The information in the two types of tables will differ to the extent that new capital is rented among industries. Among the products for which the difference between the user and owner bases is important are automobiles, airplanes, railroad cars, computers, and structures. The 1963 table presented in this article is on a user basis. While it would be desirable to have tables on both bases, an owner table was not prepared because, in general, data on the ownership of rented new capital are not available.⁴

Chart 7 illustrates the relationship of the capital flow table to the input-output table. In the input-output table the interindustry flows are recorded in the blue area. These flows represent the goods and services purchased on current account. The producing industries are listed down the side and the consuming industries across the top. The input-

1. This work is part of the Federal Government's Interagency Growth Study. Guidance for this research program is provided by an interagency steering committee consisting of representatives of the Office of Business Economics, the Bureau of Labor Statistics, the Office of Management and Budget, and the Council of Economic Advisors. The committee is chaired by a member of the Council.

2. The 1968 input-output study is described in "Input-Output Structure of the U.S. Economy: 1968," *Survey of Current Business*, November 1969. That article presented the 1968 input-output table aggregated to 85 industries. More detailed tables showing 367 industries are contained in *Input-Output Structure of the U.S. Economy: 1968*, Volume 1, *Transactions Data for Detailed Industries*; Volume 2, *Direct Requirements for Detailed Industries*; and Volume 3, *Total Requirements for Detailed Industries* (available for \$1.75 each from the Superintendent of Documents, U.S. Government Printing Office). These data are also available on magnetic tape. Inquiries about purchase of the tapes should be directed to OBE.

3. A table of total requirements shows the output required (directly and indirectly) from each industry for a given industry to deliver one dollar of output to final demand. A bill of goods is a breakdown of this composition of a purchase by final demand according to the industry categories of the input-output table.

Further discussion of the preparation of bills of goods is contained in the November 1969 *Survey* article and in Beatrice N. Vaccaro's "An Input-Output Method for Long-Range Economic Projections" in the July 1971 *Survey*.

The long-term projections prepared by the Bureau of Labor Statistics were an input-output application in which a capital flow table was used to translate capital requirements of each industry into demands placed on the construction and equipment producing industries. A capital flow table prepared by BLS for 1968 was used. The BLS projections are described in *Projections 1970*, BLS Bulletin No. 1835, December 1968, and *Patterns of U.S. Economic Growth*, BLS Bulletin No. 1872, 1970.

4. The OBE-SEC survey estimates of total expenditures for new plant and equipment by industry are largely on an owner basis. However, the survey provides little information on type of asset that would facilitate construction of an owner table. In addition, there are differences in coverage and classification between the OBE-SEC data and the gross private fixed capital formation component of GNP in the input-output table. The OBE-SEC estimates do not include capital expenditures of farm enterprises, professional persons, nonprofit institutions, and real estate operators. They also exclude, while the GNP component includes, oil well drilling costs charged to current expenses and expenditures for passenger cars for business purposes by salaried workers who receive reimbursement for the use of their cars. The OBE-SEC survey is reported on a company basis with the company's total capital expenditures—for its primary activity as well as all its secondary activity—being assigned to the primary industry. The input-output table and capital flow table are prepared on a modified establishment basis which in many instances incorporates adjustments to the establishment data that subtract the secondary activities from the producing industries and add them to the primary industry.

output table also records the sales of goods and services to final demand as well as each industry's value added. The sum of sales to final demand and the sum of industries' value added are both equal to GNP.

The capital flow table disaggregates the final demand column labeled in-

vestors.⁵ Individual industries that use capital are listed across the top of the capital flow table. Industries that produce capital are listed down the side. In the simplified and highly

5. While net inventory change is included in the investors column, it is not included in the capital flow table.

aggregated table in chart 7, the capital producing industries are construction and manufacturing. The trade and transportation industries are also shown as producers of capital goods because, as in OBE's input-output tables, flows are recorded in producers' prices and the associated trade margins and trans-

CHART 7

INPUT-OUTPUT FLOW TABLE

	Agriculture	Mining	Construc- tion	Manufac- turing	Trade	Transpor- tation	Services	Other	Final Markets			
									Persons	Investors	Foreigners	Govern- ment
Agriculture									Personal consumption expenditures	Gross private domestic investment	Net exports of goods and services	Government purchases of goods and services
Mining												
Construction												
Manufacturing												
Trade												
Transportation												
Services												
Other												
Value added									GROSS NATIONAL PRODUCT			

CAPITAL FLOW TABLE

	Agri- culture	Mining	Construc- tion	Manufac- turing	Trade	Transpor- tation	Services	Other
Construction								
Manufacturing								
Trade								
Transportation								

portation costs are entered in the trade and transportation rows, i.e., as output of those two industries.

Results of the Study

The capital flows for 1963, as estimated in this study, are shown in table 1. Across the top of table 1 are listed 76 industries that use capital. These industries are the same as those in the summary version of the 1963 input-output table that was published in the November 1969 Survey. That table contains 85 industries, of which nine do not use capital.^a Down the

side of table 1 are listed 31 industries producing new equipment and a single industry producing new construction. In addition, as in the example in chart 7, the table contains rows for the trade and transportation costs. It also contains rows for the following: the cost of installing communication equipment when that cost is capitalized by the communications industry; the commissions earned by the real estate industry on the sale of structures; imported equipment; and the costs of insuring imported equipment during shipment to the U.S. The total of the entries in each row, shown in the last column, is equal to that row's entry in the gross private fixed capital formation table.

As shown in table 1, the total of gross private fixed capital formation

in 1963 was about \$81 billion of which equipment (including trade margins and transportation costs) accounted for about \$33½ billion and construction for about \$47½ billion. The construction total includes private non-farm residences, whose value was \$25 billion. The table shows these residences as being supplied to the real estate and rental industry. This is the result of the convention in national income accounting of treating home ownership as a business and combining it with rental housing in the real estate and rental industry.

The largest producer of new equipment in 1963 was the motor vehicle and equipment industry, with almost \$5.7 billion of capital equipment sales. The next largest was special industry machinery and equipment with a little over \$2 billion. There were six indus-

Table 1.—Interindustry Transactions
[In millions of dollars]

Industry No.	For the distribution of capital produced by an industry, read the row for that industry. For the composition of capital used by an industry, read the column for that industry.	Livestock and live-stock products	Other agricultural products	Forestry and fishery products	Agricultural, forestry and fishery services	Iron and ferroalloy and metal	Nonferrous metal and metal	Coal mining	Crude petroleum and natural gas	Stone and clay and refractory and quarrying	Chemical and allied products and mining	New construction	Maintenance and repair construction	Ordinance and accessories
		1	2	3	4	5	6	7	8	9	10	11	12	13
11	New construction.....	441.8	285.2	6.5	20.5	53.2	31.1	44.9	2,480.3	62.2	12.6	162.7	66.3	37.3
17	Miscellaneous textile goods and floor coverings.....	(*)	(*)	(*)	(*)	(*)	(*)	1.1	(*)	(*)	(*)	1.4	0.9	0.6
20	Lumber and wood products, except containers.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
22	Household furniture.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
23	Other furniture and fixtures.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
32	Rubber and miscellaneous plastics products.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
38	Primary nonferrous metal manufacturing.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
39	Metal castings.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
40	Heating, plumbing and structural metal products.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
42	Other fabricated metal products.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
43	Engines and turbines.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
44	Farm machinery and equipment.....	25.5	1,544.5	1.1	27.5	1.1	1.4	1.4	6.2	2.3	1.6	24.4	11.8	1.1
45	Construction, mining and oil field machinery.....	0.0	30.3	(*)	(*)	0.5	25.7	122.9	1.0	74.4	21.2	527.6	214.9	2.3
46	Machinery handling machinery and equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
47	Metalworking machinery and equipment.....	1.6	1.9	1.1	7.7	1.3	1.3	2.1	7.0	1.5	1.4	64.3	25.5	10.3
48	Special industry machinery and equipment.....	1.3	2.4	1.5	21.5	1.2	1.6	1.5	(*)	1.4	2.0	4.3	2.0	2.1
49	General industrial machinery and equipment.....	2.0	18.2	(*)	(*)	1.5	3.3	11.7	77.7	6.8	3.6	9.8	2.7	6.9
50	Machinery shop products.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
51	Office, computing and accounting machines.....	1.2	2.5	1.1	4.4	1.3	2.1	2.6	13.3	2.3	1.3	18.2	6.0	4.8
52	Service industry machines.....	1.3	2.6	1.1	6.6	1.1	1.3	1.3	1.4	1.2	1.1	7.1	3.1	2.4
53	Electric industrial equipment and apparatus.....	2.5	8.4	(*)	(*)	6.1	5.3	5.6	20.6	6.7	2.9	18.6	6.3	7.2
54	Household appliances.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
55	Electric lighting and wiring equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
56	Radio, television and communication equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
57	Electronic components and accessories.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
58	Miscellaneous electrical machinery, equipment and supplies.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
59	Motor vehicles and equipment.....	367.4	779.9	2.5	3.2	1.6	3.3	7.1	78.9	37.5	1.4	555.8	281.6	8.3
60	Aircraft and parts.....	1.1	1.2	1.3	11.6	6.2	1.6	1.2	8.3	1.6	1.3	6.3	3.2	6.3
61	Other transportation equipment.....	5.1	47.4	28.1	1.6	6.2	2.1	1.5	1.9	1.9	1.4	19.3	1.7	1.7
62	Scientific and controlling instruments.....	1.4	1.2	1.1	1.3	1.0	2.8	1.8	24.4	1.8	1.3	1.3	1.1	1.7
63	Optical, ophthalmic and photographic equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
64	Miscellaneous manufacturing.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
65	Transportation and warehousing.....	5.8	28.1	1.6	1.6	1.7	1.4	4.4	7.5	3.3	1.3	41.6	13.9	1.0
66	Communications; except radio and TV broadcasting.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
69	Wholesale and retail trade.....	56.0	738.4	4.9	17.2	2.8	6.3	18.0	72.1	13.3	2.5	259.6	92.3	10.1
70	Finance and insurance.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
71	Real estate and rental.....	10.8	18.6	1.1	(*)	(*)	(*)	(*)	2.7	1.5	1.1	1.4	2.7	1.2
80A	Directly allocated imports.....	7.9	61.5	(*)	(*)	(*)	(*)	(*)	1.2	1.3	(*)	8.0	(*)	(*)
T.	Total.....	631.1	4,147.6	32.8	127.8	33.6	96.6	298.9	2,962.2	188.9	52.3	2,486.3	441.4	204.5

^aLess than \$10,000.

¹Excludes—\$971.4 million of net purchases of scrap, used and secondhand goods by the gross

private fixed capital formation sector and trade margins of +\$12.5 million on its gross purchase of used goods.

tries that produced between \$1.5 and \$2 billion of equipment. These were radio, television, and communication equipment; farm machinery and equipment; electrical and industrial equipment; construction, mining, and oil field machinery and equipment; metal-working machinery and equipment; and office, computing, and accounting machines. These eight industries accounted for about two-thirds of all equipment produced in 1963.

By far the largest user of new fixed capital is the real estate and rental industry, which received about \$26.5 billion in 1963. Following in order of importance are trade with \$6.8 billion; medical, educational services, and non-profit institutions with \$5.1 billion; and electric, gas, water, and sanitary services with \$4.9 billion. Other industries that received more than \$3

billion of new fixed capital are agricultural products other than livestock, transportation and warehousing, and communication except radio and TV broadcasting. Of the 76 industries shown in table 1, 52 are manufacturing industries; in aggregate they received \$12.3 billion or 15 percent of total investment in structures and equipment.

Distribution of the equipment produced by the office, computing, and accounting machines industry can serve as an illustration of the marketing information contained in an industry row in table 1. In 1963, this industry produced about \$1.6 billion of capital equipment. The products of this industry were used in every industry shown in the table. The largest users were finance-insurance and trade, with each receiving about \$270 million of

new equipment. Other large users were business services with \$138 million, medical, educational services, and non-profit organizations with \$94 million, and transportation and warehousing with \$78 million. These five industries accounted for about half of the use of new office, computing, and accounting machines.

Additional detail

Additional detail is available on the products of the producing industries.⁷ Table A illustrates the greater detail in terms of the detailed products sup-

7. Estimates are available at two levels of greater detail. In both cases, the number of user industries remains at 76. A table showing 102 industries producing equipment and 4 categories of new construction is available on request. The producing industries in this table correspond to those shown in the 387 industry I-C table (see footnote 2) and are essentially on a four-digit SIC basis. In addition, a printout of the estimates at the working level of 495 types of equipment and 26 types of new construction can be purchased from OBE for \$65.

In New Structures and Equipment, 1963

(at producers' prices)

Food and kindred products	Tobacco manufactures	Bread and narrow fabrics, yarn and thread mills	Miscellaneous textile goods and floor coverings	Apparel	Miscellaneous fabric and textile products	Lumber and wood products, except furniture	Wooden containers	Household furniture	Other furniture and fixtures	Paper and allied products, except containers	Paperboard containers and boxes	Printing and publishing	Chemicals and allied chemical products	Plastics and synthetic materials	Drugs, chemicals, and toilet preparations	Paints and allied products	Petroleum refining and related industries	Rubber and miscellaneous plastics products	Industry No.
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
258.9	18.7	30.4	20.5	24.8	9.7	128.2	2.3	23.8	17.3	89.3	28.8	112.5	226.5	53.1	34.6	14.4	288.9	61.0	11
1.6	.1	.4	.1	.7	.1	.2	(*)	.2	.1	.4	.2	1.7	.5	.1	.3	.1	.4	.4	17
4.4	(*)	.1	(*)	.2	(*)	.1	(*)	.1	(*)	.1	(*)	.5	1.0	(*)	.1	(*)	.1	.1	27
18.4	(*)	2.7	(*)	4.3	(*)	1.6	(*)	1.2	(*)	2.5	1.0	11.6	3.4	(*)	2.2	(*)	2.4	2.6	28
.4	.1	.1	.1	.2	.1	.1	(*)	.1	(*)	.1	(*)	.3	.1	(*)	.1	(*)	.1	.1	32
9.0	(*)	(*)	(*)	(*)	(*)	7.4	(*)	.2	.1	38.1	(*)	(*)	134.4	21.2	5.2	2.1	11.4	1.9	36
17.1	.1	(*)	(*)	(*)	(*)	.6	(*)	.6	.3	58.3	(*)	(*)	54.0	10.3	3.9	.3	(*)	(*)	40
2.6	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	42
4.6	.1	.4	.2	.1	(*)	8.1	.1	.2	.1	7.4	(*)	.1	15.8	1.7	(*)	.1	10.3	.8	43
.4	(*)	.2	(*)	(*)	(*)	2.5	(*)	(*)	(*)	.3	(*)	(*)	.4	(*)	(*)	(*)	.1	.1	44
36.4	5.0	11.1	2.0	10.6	1.6	14.4	(*)	3.1	(*)	14.6	4.4	14.6	28.0	17.5	4.4	1.0	5.2	13.4	45
12.7	3.6	3.6	2.6	1.8	.3	3.6	(*)	3.6	1.8	14.6	4.4	14.6	28.0	17.5	4.4	1.0	5.2	13.4	46
409.8	16.8	197.7	22.1	62.9	17.0	112.1	4.8	11.8	2.4	312.0	41.4	265.8	92.6	66.1	28.8	12.4	26.8	100.0	47
24.7	2.2	7.0	2.4	3.7	.7	14.7	.3	6.0	4.9	39.9	6.0	6.9	108.8	63.8	28.0	1.7	17.4	22.0	48
67.5	2.8	7.7	1.2	9.8	3.9	8.0	(*)	3.7	1.8	9.2	2.9	18.9	32.5	6.6	6.1	4.6	22.2	9.6	51
45.8	.4	2.3	.2	.8	.1	.6	(*)	.5	.2	2.0	.4	4.3	6.1	1.3	2.0	.3	3.1	1.5	52
82.4	(*)	8.7	1.6	3.2	3.6	11.7	(*)	4.3	(*)	68.2	2.3	8.3	60.4	3.8	2.3	1.0	17.3	10.0	53
.9	(*)	(*)	(*)	(*)	(*)	.1	(*)	.8	(*)	.7	(*)	.4	.5	(*)	(*)	(*)	.4	(*)	54
1.1	(*)	(*)	(*)	(*)	(*)	.2	(*)	.1	(*)	.3	(*)	.1	.6	(*)	(*)	(*)	.1	(*)	55
1.5	(*)	(*)	(*)	(*)	(*)	.2	(*)	.1	(*)	.3	(*)	.1	.6	(*)	(*)	(*)	.1	(*)	56
2.3	(*)	(*)	(*)	(*)	(*)	.2	(*)	.1	(*)	.3	(*)	.1	.6	(*)	(*)	(*)	.1	(*)	57
4.7	(*)	(*)	(*)	(*)	(*)	.2	(*)	.1	(*)	.3	(*)	.1	.6	(*)	(*)	(*)	.1	(*)	58
141.5	4.9	8.3	1.8	11.6	1.9	28.8	1.8	4.3	2.7	9.7	4.6	32.1	13.4	2.7	3.0	2.3	7.4	7.5	59
4.5	.7	.7	(*)	(*)	(*)	.1	(*)	(*)	(*)	2.3	1.5	(*)	1.6	(*)	(*)	(*)	6.7	2.3	60
16.1	.6	2.6	.8	.3	.1	.4	(*)	.2	.1	6.8	.5	.5	37.7	4.3	13.8	1.4	11.6	5.0	61
18.9	(*)	1.0	.3	.3	.1	.4	(*)	.2	.1	3.4	.3	11.8	32.4	2.1	11.3	2.3	6.9	3.5	62
12.6	(*)	.1	.1	.1	.1	.4	(*)	.2	.1	1.1	.3	1.7	2.2	(*)	.2	.1	1.1	.3	63
(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	64
181.0	2.7	15.4	2.9	13.9	2.2	28.8	.6	6.7	3.0	39.5	2.3	67.0	55.3	19.4	14.5	3.6	17.6	17.5	65
4.3	(*)	(*)	(*)	(*)	(*)	.1	(*)	.4	(*)	1.2	.3	1.3	(*)	(*)	(*)	(*)	(*)	(*)	66
1.8	(*)	4.8	.9	2.9	.7	.2	(*)	.1	(*)	.4	.1	17.1	1.1	.8	.7	.2	3.6	.7	67
1,332.6	58.5	232.7	64.6	279.8	38.3	287.1	10.6	74.3	46.5	537.1	168.1	576.2	964.9	394.9	216.3	59.6	481.5	364.8	Total

Note.—Details may not add to totals because of rounding.

Source: U.S. Department of Commerce, Office of Business Economics.

Table A.—Detail on Products of the Office, Computing, and Accounting Machines Industries, 1963

	Millions of dollars
Computers.....	920.1
Office machines, excluding computers.....	890.7
Typewriters.....	113.3
Railroad track and motor truck scales.....	11.2
Industrial scales.....	20.2
Retail and commercial scales.....	12.1
Mailing and parcel post scales.....	2.3
Office machines, not elsewhere classified.....	162.4
Total.....	1,618.0

plied by the office, computing, and accounting machines industry.

The table shows that computers accounted for more than half of the equipment supplied by the industry in 1963. The unpublished data show that the distribution of computers to users is roughly the same as the distribution

pattern for the overall industry in table 1. The five largest users of computers are the same as the largest users of the overall industry's output, as listed above. The largest user is finance and insurance with almost \$170 million, followed by business services with \$92 million, medical, educational services, and nonprofit organizations with \$69 million, and trade and transportation-warehousing with almost \$50 million each. It should be noted that the estimates of the distribution of new computers include the usage of computers leased by the computer manufacturers to other firms. In table 1, these computers are shown as being used by the lessee. The large flow to business services includes computers used by firms that are in the business of selling computer time and services, often on an hourly basis.

Methodology

The estimates of gross private fixed capital formation were developed as part of the 1963 input-output table.⁸ In the input-output study, new private construction is defined as the value-added-in-place of private original erections, additions, and alterations which increase the stock of facilities. New private construction includes buildings, such as dwellings and factories, and nonbuilding facilities, such as railroads, pipelines, and telephone and telegraph facilities. Equipment that is an integral part of the facility and essential for its

8. The 1963 figure for gross private fixed capital formation as now published in the national income and product accounts differs from that shown in table 1 because the former has not yet been revised to conform to the input-output calculations. The forthcoming benchmark revisions of the national income and product accounts, which will incorporate these calculations, may in turn result in some modifications of the input-output information presented here.

Table 1.—Interindustry Transactions in New

(In millions of dollars)

Industry No.	For the distribution of capital produced by an industry, read the row for that industry. For the composition of capital used by an industry, read the column for that industry.	Leather tanning and leather products	Footwear and other leather products	Other and furs products	Stone and clay products	Primary iron and steel manufacturing	Primary nonferrous metal manufacturing	Metal containers	Heating, plumbing and structural metal products	Staple, power machine products and tools	Other fabricated metal products	Engines and turbines	Farm machinery and equipment	Construction, mining and oil field machinery
		23	24	25	26	27	28	29	30	31	32	33	34	35
11	New construction.....	1.0	4.4	29.7	137.6	349.9	75.1	8.2	48.1	26.4	35.2	9.4	20.2	17.0
12	Miscellaneous textile goods and floor coverings.....	(*)	.2	.1	.3	.7	.3	(*)	.4	.3	.4	.1	.2	.2
13	Lumber and wood products, except containers.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
14	Furniture.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
15	Other furniture and fixtures.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
16	Rubber and miscellaneous plastics products.....	(*)	1.5	.9	2.2	5.0	1.9	(*)	2.5	1.3	2.4	(*)	1.1	1.1
17	Primary nonferrous metal manufacturing.....	(*)	.1	(*)	.1	.2	.1	(*)	.1	.1	.1	(*)	(*)	.1
18	Metal containers.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
19	Heating, plumbing and structural metal products.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
20	Other fabricated metal products.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
21	Engines and turbines.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
22	Farm machinery and equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
23	Construction, mining and oil field machinery.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
24	Materials handling machinery and equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
25	Metalworking machinery and equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
26	Special industry machinery and equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
27	General industrial machinery and equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
28	Machine shop products.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
29	Office, computing and accounting machines.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
30	Service industry machines.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
31	Electric industrial equipment and apparatus.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
32	Household appliances.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
33	Electric lighting and wiring equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
34	Radio, television and communication equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
35	Electronic components and accessories.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
36	Miscellaneous electrical machinery, equipment and supplies.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
37	Motor vehicles and equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
38	Aircraft and parts.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
39	Other transportation equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
40	Scientific and controlling instruments.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
41	Optical, ophthalmic and photographic equipment.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
42	Miscellaneous manufacturing.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
43	Transportation and warehousing.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
44	Communication; except radio and TV broadcasting.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
45	Wholesale and retail trade.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
46	Finance and insurance.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
47	Real estate and rental.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
48A	Directly allocated imports.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
T.	Total.....	5.5	40.3	121.3	604.4	1123.7	345.1	74.9	173.6	124.5	333.5	69.7	72.8	62.1

Table 2.—Types of Data Used in Estimating 1963 Capital Flows

	Equipment		Structures	
	Number of products	In millions of dollars at purchaser's prices	Number of products	In millions of dollars at purchaser's prices
1. Data on purchases.....	0	0	17	35,466
2. Output of a product used in a single industry.....	176	7,818	4	3,493
3. Output of a product used in a few industries.....	97	8,635	4	3,493
4. Output of a product in general use.....	131	12,432	4	3,493
Total.....	403	33,585	26	47,374

merry-go-rounds is the amusements industry. Capital flow estimates based on this type of information are, like those based on direct purchase information, generally of quite good quality.

Categories 1 and 2 are combined for structures in table 2. An essential difference between the two categories is whether the data originate with the

user (category 1) or the producer (category 2). In the case of construction, much of the data originates with contractors, architects, and others who report to the F.W. Dodge Division of McGraw-Hill Information Systems, and it did not seem meaningful to attempt to distinguish between producer and user as the source of the data.

The third category in table 2 also refers to types of capital which have a specialized use, but which are used by a relatively small group of industries rather than by one single industry. The user industries are usually fairly easy to identify. Within this group of users, the output of the particular type of capital is allocated on the basis of some variable which is assumed to be a good indicator of use of the product.

The last category in table 2 refers to types of capital in general use for which resort must be made to indirect estimating methods to allocate output to using industries. The indirect methods distribute the output of a product to using industries in the same proportions as some measured variable which

(Continued on page 44)

Table 1.—Interindustry Transactions in New Structures and Equipment, 1963—Continued

(In millions of dollars at producers' prices)

Industry No.	For the distribution of capital produced by an industry, read the row for that industry. For the composition of capital used by an industry, read the column for that industry.													
		Transportation and warehousing	Communications except radio and TV broadcasting	Radio and TV broadcasting	Electric, gas, water and sanitary services	Wholesale and retail trade	Finance and insurance	Real estate and rental	Holding, personal and repair services except auto	Business services	Automobile repair and services	Amusements	Medical, educational services and non-profit organizations	Gross private fixed capital formation ¹
		65	66	67	68	69	70	71	72	73	74	75	76	77
11	New construction.....	799.0	1,729.0	89.0	3,132.5	2,259.7	1,005.0	25,058.4	969.5	336.3	417.7	301.9	3,462.7	46,151.4
17	Miscellaneous textile goods and floor coverings.....	2.3	2.3	.1	1.3	13.3	8.4	.3	1.4	2.7	.2	.5	5.5	62.5
20	Lumber and wood products, except containers.....	2.3	2.3	.1	1.3	13.3	8.4	.3	1.4	2.7	.2	.5	5.5	62.5
22	Household furniture.....	25.2	22.0	14.5	8.3	704.8	66.0	6.2	121.2	24.3	1.5	30.0	302.2	1,123.6
23	Other furniture and fixtures.....	1.1	1.0	(*)	.4	3.8	2.7	.2	.5	1.1	.1	.2	1.6	15.1
22	Rubber and miscellaneous plastics products.....	22.2	22.2	(*)	.4	3.8	2.7	.2	.5	1.1	.1	.2	1.6	15.1
38	Primary nonferrous metal manufacturing.....	7.2	7.2	(*)	.2	10.1	42.7	(*)	.2	(*)	.1	.7	.1	394.3
40	Metal containers.....	7.2	7.2	(*)	.2	10.1	42.7	(*)	.2	(*)	.1	.7	.1	394.3
42	Heating, plumbing and structural metal products.....	7.2	7.2	(*)	.2	10.1	42.7	(*)	.2	(*)	.1	.7	.1	394.3
42	Other fabricated metal products.....	7.2	7.2	(*)	.2	10.1	42.7	(*)	.2	(*)	.1	.7	.1	394.3
43	Engines and turbines.....	7.0	7.0	1.0	261.0	3.2	.3	207.1	2.6	(*)	.1	20.8	.5	238.2
44	Farm machinery and equipment.....	7.0	7.0	1.0	261.0	3.2	.3	207.1	2.6	(*)	.1	20.8	.5	238.2
45	Construction, mining and oil field machinery.....	4.6	(*)	.3	3.3	3.3	.3	.3	(*)	.3	.3	.3	.3	1,740.3
46	Materials handling machinery and equipment.....	84.8	143.1	143.1	143.1	143.1	143.1	143.1	143.1	143.1	143.1	143.1	143.1	644.9
47	Metallurgical machinery and equipment.....	38.2	12.1	1.0	27.2	7.9	.6	14.3	1.4	38.6	.7	2.6	1,079.2	2,824.9
48	Special industry machinery and equipment.....	78.0	8.6	1.2	100.5	49.3	1.9	8.3	11.5	47.2	8.4	15.2	1,325.1	6.4
49	General industrial machinery and equipment.....	77.7	25.2	24.7	57.9	239.1	274.9	16.3	16.9	157.9	7.7	8.8	94.0	1,515.0
50	Machine shop products.....	7.0	2.2	1.4	4.7	720.2	5.0	4.5	92.9	43.6	16.0	4.8	47.9	1,111.6
51	Office, computing and accounting machines.....	7.0	2.2	1.4	4.7	720.2	5.0	4.5	92.9	43.6	16.0	4.8	47.9	1,111.6
52	Service industry machines.....	7.0	2.2	1.4	4.7	720.2	5.0	4.5	92.9	43.6	16.0	4.8	47.9	1,111.6
53	Electric industrial equipment and apparatus.....	17.7	162.2	82.6	816.4	15.0	.5	1	34.9	10.3	2.0	.7	7.9	1,541.5
54	Household appliances.....	1.3	.9	.1	.7	48.2	3.1	.9	48.0	1.7	.4	.4	4.3	119.9
55	Electric lighting and wiring equipment.....	1.3	.9	.1	.7	48.2	3.1	.9	48.0	1.7	.4	.4	4.3	119.9
56	Radio, television and communication equipment.....	289.8	1,136.5	185.2	2.2	48.0	2.9	.4	27.8	14.9	9.1	59.6	33.1	1,923.0
57	Electronic components and accessories.....	4.3	.8	11.1	2.2	4.9	18.3	.7	.7	2.6	.3	.4	5.0	96.2
58	Miscellaneous electrical machinery, equipment and supplies.....	22.6	33.8	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	73.7
59	Motor vehicles and equipment.....	644.6	142.1	20.7	48.1	1,222.5	74.5	44.5	183.0	111.0	264.4	19.3	277.3	5,471.4
60	Aircraft and parts.....	244.0	142.1	20.7	48.1	1,222.5	74.5	44.5	183.0	111.0	264.4	19.3	277.3	5,471.4
61	Other transportation equipment.....	244.0	142.1	20.7	48.1	1,222.5	74.5	44.5	183.0	111.0	264.4	19.3	277.3	5,471.4
62	Scientific and controlling instruments.....	7.7	.2	(*)	84.6	2.7	.4	.1	.2	27.6	(*)	.5	296.9	571.3
63	Optical, ophthalmic and photographic equipment.....	1.5	1.3	1.1	3.0	7.3	2.5	.7	37.9	50.7	.1	11.3	67.0	349.1
64	Miscellaneous manufacturing.....	4.3	.9	.1	1.1	128.2	10.7	3.1	65.0	6.9	6.5	188.5	124.9	299.3
65	Transportation and warehousing.....	45.6	11.3	3.1	28.8	101.6	9.1	3.5	12.5	7.6	14.7	8.3	28.1	574.4
66	Communications except radio and TV broadcasting.....	45.6	11.3	3.1	28.8	101.6	9.1	3.5	12.5	7.6	14.7	8.3	28.1	574.4
67	Radio and TV broadcasting.....	45.6	11.3	3.1	28.8	101.6	9.1	3.5	12.5	7.6	14.7	8.3	28.1	574.4
68	Electric, gas, water and sanitary services.....	214.4	313.7	28.5	122.6	712.6	114.4	94.5	125.2	125.2	80.5	145.3	332.9	4,344.9
69	Wholesale and retail trade.....	214.4	313.7	28.5	122.6	712.6	114.4	94.5	125.2	125.2	80.5	145.3	332.9	4,344.9
70	Finance and insurance.....	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)	.7
71	Real estate and rental.....	1.3	.9	.1	.7	48.2	3.1	.9	48.0	1.7	.4	.4	4.3	119.9
72	Holding, personal and repair services except auto.....	6.9	.7	(*)	.3	27.5	15.9	1,062.3	14.0	4.1	3.0	2.6	24.5	1,224.0
73	Business services.....	6.9	.7	(*)	.3	27.5	15.9	1,062.3	14.0	4.1	3.0	2.6	24.5	1,224.0
74	Automobile repair and services.....	6.9	.7	(*)	.3	27.5	15.9	1,062.3	14.0	4.1	3.0	2.6	24.5	1,224.0
75	Amusements.....	6.9	.7	(*)	.3	27.5	15.9	1,062.3	14.0	4.1	3.0	2.6	24.5	1,224.0
76	Medical, educational services and non-profit organizations.....	6.9	.7	(*)	.3	27.5	15.9	1,062.3	14.0	4.1	3.0	2.6	24.5	1,224.0
77	Gross private fixed capital formation.....	6.9	.7	(*)	.3	27.5	15.9	1,062.3	14.0	4.1	3.0	2.6	24.5	1,224.0
T.	Total.....	3,751.6	3,264.1	471.1	4,325.1	6,291.4	1,738.1	26,515.3	1,606.1	966.9	966.4	621.7	6,134.7	58,963.6

1. See page 18 for footnotes.

Direct Investments

(Continued from page 15)

The coverage is believed to be virtually complete for major U.S. investors. Details of methodology, regulations and instructions, definitions, and copies of the reporting forms can be found in the *Direct Investments Abroad* volume.

"Direct foreign investment" is defined to include all foreign business organizations in which a U.S. person, organization, or affiliated group owns an interest of 10 percent or more. In addition, a foreign business organization in which 50 percent or more of voting stock is owned by U.S. residents is counted as a direct foreign investment even if no single U.S. group owns as much as 10 percent. It should be noted that some of the U.S. reporters who own direct investments abroad are themselves owned by foreigners, and direct investments of such U.S. reporters are included in this survey. Not covered are U.S. holdings of the stocks or long-term debt of foreign organizations not meeting one of these criteria; such holdings are considered portfolio, not direct, investments.

"Direct foreign investment" also includes all equity in the stock and surplus, and ownership of the long-term debt, of the foreign organization belonging to U.S. persons other than the U.S. parent of the foreign organization. However, U.S. banking and nonparent commercial claims on the foreign organization, or loans by U.S. Government agencies, are not included; they are shown elsewhere in the statements of the U.S. balance of payments and international investment position. Thus, accounts between the home offices and foreign branches of U.S. banks which are reportable on Treasury Department Foreign Exchange Forms B1 and B2 are excluded. The vast majority of such accounts represent balances held by the foreign branches with their U.S. home offices.

Structures and Equipment

(Continued from page 22)

is assumed to be a good indicator of the use of the product. For example,

typewriters purchased on capital account were distributed to using industries on the basis of industry employment of typists. In most cases, all 78 user industries identified in the capital flow table were included in the allocation.

Evaluation

The estimates of equipment flows shown in table 1 fall short of the quality of the estimates of flows on current account in the input-output table for 1963. This is because there is much less hard statistical information available for estimating capital flows than for estimating current account flows.

Table 2 shows that, in dollar terms, well over half of the flow of equipment (\$19.4 billion out of \$33.6 billion) was allocated to using industries according to indirect estimating methods of one sort or another.

Information similar to that in table 2 has not been compiled for the current account flows in the 1963 input-output table. However, much more information on actual purchases was available for estimating the current account flows so that indirect methods were used much less. This is especially true for manufacturing industries, for which the Census of Manufactures supplied detailed information for more than half of the total consumption of materials by manufacturing plants. In addition, the regulatory commissions and various private surveys provided much information on current account flows for non-manufacturing industries. Firm statistical data on purchases, and in some instances sales, underlie about one-half of the total dollar amount of flows in the current account table. In addition, information of the sort listed in categories 2 and 3 in table 2, which can also yield quite good estimates, is used substantially in the current account table.

Another factor to be considered in evaluating the quality of the equipment flows is that indirect estimating

methods are in general more reliable for estimating current consumption than capital purchases. The consumption of many goods in current production can be closely approximated by such variables as output or employment, for which we have good data. This is not the case for purchases of new equipment. One can theorize about factors which affect new capital purchases, such as industry profits, excess capacity, age of stock, expected demand, and so on. However, we do not have an adequate statistical or theoretical basis for setting up equations incorporating such variables to estimate an industry's demand for specific types of fixed capital. Instead, the basis for the estimates was usually data on output, employment, or, in some instances, capital stocks.³

Table 2 does not provide a very useful basis for evaluating the estimates of new structures. Although three-fourths of the total dollar amount of construction is in the combined categories 1 and 2, the quality of the construction estimates is probably impaired because to a considerable extent they are based on secondary sources of information rather than on direct surveys of work done.

It is clear that significant additions to the Federal statistical program are required before fully adequate capital flow tables can be constructed. As a result of the experience gained in constructing the table for 1963, OEE is better able to assess the need for additional statistics on business purchases, sales, and rentals of new fixed capital for estimating inter-industry flows, and to formulate specific recommendations for such additions. The type of analysis summarized in table 2 extended to specific capital items and industries can provide guidelines for the needed improvements by showing the products and industries for which new or expanded data collection surveys are most needed.

3. Information concerning the basis for distributing each product to the using industries will be available shortly.